

# Water-Based Parts Cleaning

*Automotive parts cleaning often involves using toxic chemicals like methylene chloride, trichloroethylene (TCE), and perchloroethylene (“perc” or PCE) or skin and lung irritants like mineral spirits. These hazardous chemicals are harmful to both human health and the environment. Shops that use these solvents to clean auto parts expose workers and the neighborhood environment to highly volatile and toxic chemicals. Consider switching to a water-based (aka aqueous) parts cleaning system to help reduce worker exposure to toxic chemicals.*

Auto shops commonly use a parts washing sink containing mineral spirits or similar chemicals as well as aerosol solvents to clean hard-to-reach parts that cannot easily be removed from the engine. The quick-drying characteristics of these chemicals make them effective at cleaning, but their rapid evaporation also means that they easily get into the shop air and cause risks for workers and the environment. We recommend eliminating the use of mineral spirits or other harmful chemicals by choosing a water-based or microbial solution for your parts washing sinks. Such systems can double as a brake washing sink (See Water-Based Brake Washing fact sheet).

Microbial solutions may also be used in parts washing sinks. The microbes in the cleaner extend the life of the solution by eating oil, grease and other contaminants. The use of microbial parts washers can eliminate fluid disposal, saving you money and reducing hazardous waste costs and generation.

If you do not choose to move to a water-based or microbial cleaning system, be sure to avoid aerosol cleaners that contain chlorinated solvents and/or list any of the following ingredients: perchloroethylene, PCE or ‘perc’, tetrachloroethylene, methylene chloride.

Some benefits of water-based cleaning methods:

- Your water-based parts cleaning sink may be able to double as a water-based brake washing sink, further reducing the use of toxic aerosols in your shop.
- Purchasing one-time use aerosol cans are typically much more expensive than using an aqueous parts washing system.
- Water-based cleaning systems are nonflammable.
- When you reduce the use of aerosol cans, you reduce the amount of solid waste you produce as well as your solid waste disposal costs.
- Properly maintained microbial units can have longer life spans than conventional parts cleaners, resulting in shop savings in product purchasing and hazardous waste disposal costs.

## **Reduce repetitive purchasing costs for chemical solvents**

Aqueous cleaning and microbial solutions can last as long as two to three years, with a lifespan far surpassing that of chemical solvents and one-time use aerosol cans.

## **Improve worker and community health**

Parts cleaning with chemical solvents expose workers to high quantities of toxic chemicals that can have adverse health effects. Using an aqueous parts cleaning system will reduce worker exposure to dangerous

chemicals and reduce the amount of volatile organic compounds (VOCs) released by your shop to potentially expose workers and customers.

## Things to Consider

### Drying time

High VOC content is the reason why solvent cleaners evaporate so quickly. Aqueous cleaning solutions have a significantly lower VOC level, and therefore may take longer to dry. Prompt drying and adding a rust inhibitor can assist in the effectiveness of using a water-based system.

### Concerns about the cost of an aqueous parts cleaner

Purchasing an aqueous parts cleaning system is a capital cost that can pay for itself over time (see case study below). Once purchased, an aqueous parts cleaning system can have a payback period ranging from three months to five years. Thus, an aqueous parts cleaning system will enable long run savings due to the long lasting nature of aqueous solutions (two to three years), and the lack of hazardous waste management costs which can rise quickly, as hazardous waste is measured per pound.

### Maximizing the lifespan of your aqueous or microbial cleaning solution

Maximizing the lifespan of the aqueous solution will likewise maximize the return on investment. Some common methods to maximize the lifespan of the aqueous solution include:

- Before bringing a part to the sink, pre-clean the parts to remove oil or grime with a towel or brush.
- Perform oil skimming to remove free-floating surface oil that will soil parts that you are attempting to clean.
- Filter the solution to remove solids from the solution.
- Maintain solution concentration according to the manufacturer's directions.
- Change the solution only when the performance declines rather than a scheduled basis.
- Accept fluid discoloration and do not change the solution solely because it 'looks dirty'. Parts washing liquid will often turn gray or brown, while not impacting the product performance.
- Keep all other shop chemicals away from the sink, and never dump chemicals into the sink. This will contaminate the solution.

For more methods to maximize the lifespan of aqueous solution, see [Certifiably Green Denver's Aqueous Parts Vehicle Repair Fact Sheet](#) or this [fact sheet and case study from the EPA and California's Department of Toxic Substances Control](#).

**Remember that spent filters, liquids and wastes must always be handled and disposed of as hazardous wastes.** Use of water-based or microbial solutions will reduce the amount of hazardous waste your shop generates, however you are responsible for disposing of all wastes properly. Water or microbial-base suppliers may dispose of all wastes as part of their service.

### Asbestos

Asbestos can still be found in products such as brakes, clutches, gasket material, and heat seals. Wet cleaning methods and avoiding use of compressed air to dry parts can keep asbestos and other harmful dusts out of the shop air and help minimize worker exposure. [See more information regarding asbestos exposure and safe practices.](#)

**For free and confidential technical assistance or questions, contact:**

**[MA Office of Technical Assistance](#) 100 Cambridge St. Suite 900, Boston, MA, 02114**

**Phone: 617.626.1060 Fax: 617.626.1095 E-mail: [maota@state.ma.us](mailto:maota@state.ma.us)**

## Take the Next Step

### Contact the Office of Technical Assistance (OTA):

OTA's [Tiffany Skogstrom](#) (617-626-1086) and [Marina Gayl](#) (617-626-1077) have expertise in auto shop environmental safety. They can offer free and confidential assistance and advice.

### Talk to your supplier

Find out if your supplier can offer or recommend a water-based brake cleaning system. [Safety-Kleen](#), [Fountain Industries](#), [Graymills](#) and [Cintas](#) are a few know vendors of portable water-based brake cleaning sinks. [ChemFree Corporation](#), [Clean Earth Solutions](#) and [Graymills](#) supply microbial parts washing units. Some of these companies may offer you a free trial – ask them!

## Find Additional Information

- See [Certifiably Green Denver's Aqueous Cleaners fact sheet](#) for maintenance tips such as extending the life of your system and servicing advice.
- For more information on the health and financial benefits of aqueous parts cleaning, as well as the risks of continued chemical solvent use, see this [fact sheet by the EPA and California's Department of Toxic Substances Control](#).
- [See this publication of the Ohio EPA, Division of Hazardous Waste Management](#) regarding cost and waste reducing aqueous parts cleaning systems.

## Success Stories

**Glenmoor Auto Repair (Freemont, CA):** Gary Raver, owner of Glenmoor Auto Repair, purchased an aqueous spray cabinet and an aqueous microbial sink to conduct all parts cleaning in his auto repair shop. By doing this, his shop reduced cleaning labor by 80 percent, and he has realized an annual savings of \$1,638. Raver also documented a payback period on his aqueous cleaning investments of 1.8 years. See the full case study on page 7 of this [report](#).

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